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United States  
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Agriculture

Soil  
Conservation  
Service

Montana  
Agricultural  
Experiment  
Station

Bozeman,  
Montana

# MONTANA WATER SUPPLY OUTLOOK

Snowpack and Streamflow  
Forecasts as of  
January 1, 1983

UNITED STATES DEPARTMENT OF AGRICULTURE  
SOIL CONSERVATION SERVICE  
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## Early season snowpack variable

Presently, the mountain snowpack is near average over most of the areas west of the Continental Divide and in southwest Montana. A small area near the Red Rock River headwaters and the southern part of the Madison River, overlapping the Montana-Idaho border, has a well above average amount of water stored in the snow.

The lower Yellowstone, headwaters of the Blackfoot, Marias, Teton, Sun and Dearborn Rivers, as well as smaller mountain ranges in central Montana, have below average snowpack.

The snow season started in September with some areas near Anaconda, Red Lodge, Bozeman, Yellowstone National Park, and Lost Trail Pass receiving heavy snowfall. The first half of October was generally dry with

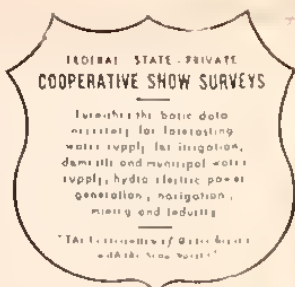
some improvement in snowfall in the latter part of the month. November snow was above average in some southwest drainages and in northwest Montana. The Big Hole area received below average snow but most other areas had about average mountain snow buildup. December was a good snowy month in most areas. The northwest corner of the state had some deficiency, while the Yellowstone River headwaters had near average amounts.

Temperatures were fairly uniform with very few warm periods and frequent snowfall so that most lower elevation snowfall remained through the new year. The snow is deeper than usual in most areas with very little settlement or crusting. In some areas, the low elevation snow is much better on a percent of average basis than in higher elevations.

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The Montana Water Supply Outlook is a publication of the U.S. Soil Conservation Service. The SCS administers the Cooperative Snow Survey Program in cooperation with other federal, state and private agencies, organizations, and individuals.

The report is prepared by SCS, Snow Survey and Water Supply Forecast Staff, P.O. Box 98, Bozeman, Montana.

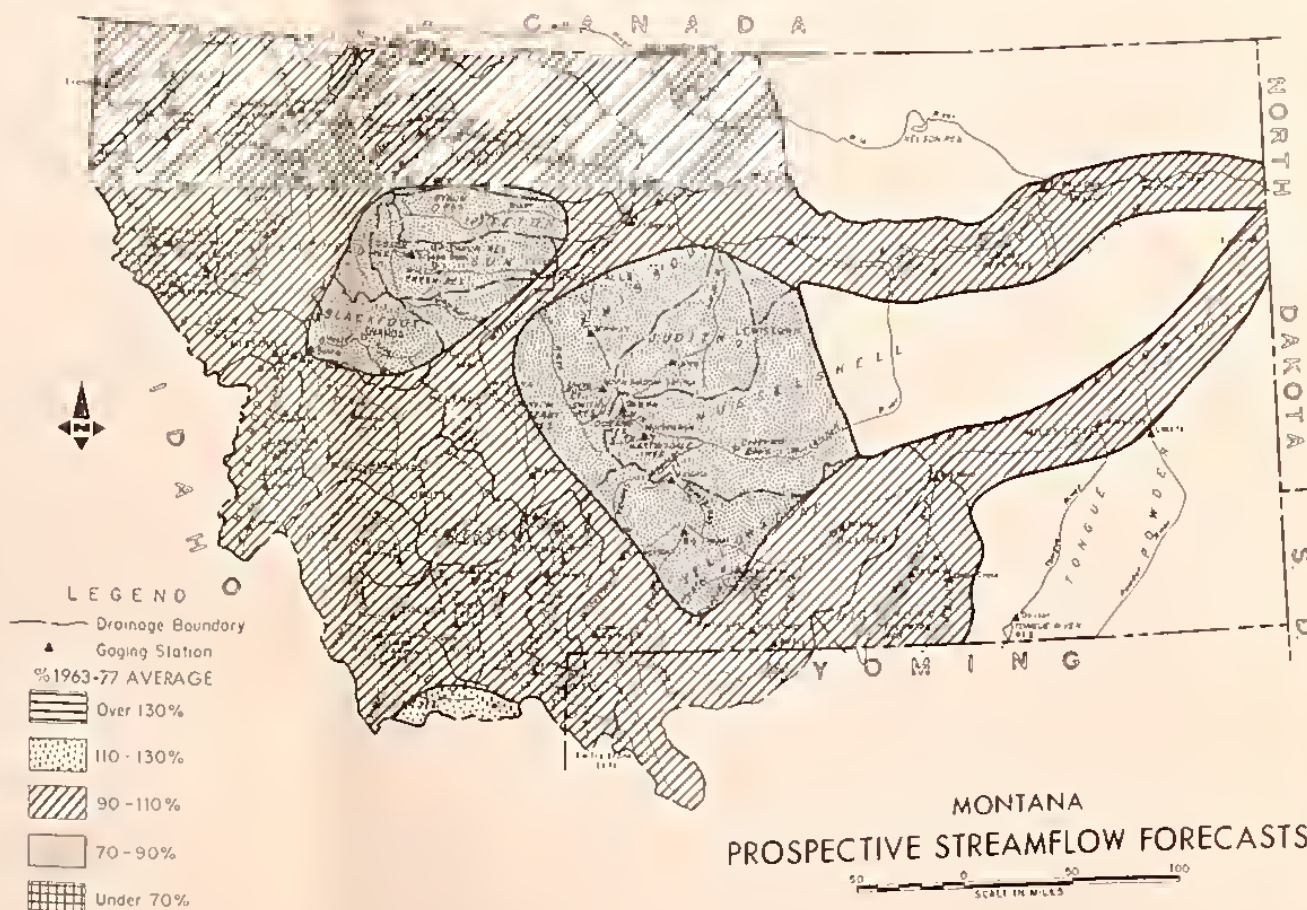


## Early streamflow forecasts near normal

Based on present snowpack and soil moisture levels, runoff during spring and summer is expected to be near to a little below average in most areas, except for well above average runoff in the Red Rock River above Lima Reservoir. Below average runoff is forecast for the Blackfoot, Sun, Teton and Dearborn Rivers, and most streams in central Montana.

By January 1, 1983, only about 40 percent of the season's snowpack has been deposited on the mountain watersheds. Projected streamflows can change considerably, depending on storm patterns over the next few months, and critical decisions relating to water supply should be delayed until a larger part of the season's snowpack has accumulated.

Forecasts for smaller streams will be released after February snow surveys, when weather patterns and the seasonal mountain snowpack become better defined.





# Missouri River & Hudson Bay Drainages

## STREAMFLOW FORECASTS

BASIN, STREAM and/or FORECAST POINT	THIS YEAR				PAST RECORD			
	FORECAST		THOUSAND ACRES		FORECAST		THOUSAND ACRES	
	Thousand Acres	Percent of Average	Last Year	Average	Thousand Acres	Percent of Average	Last Year	Average
PERIOD	April - September				April - July			
BIG HOLE RIVER near Melrose	785	99		792	720	99		730
NADISON RIVER near McAllister (4)	920	103	1024	892	730	103	797	706
GALLATIN RIVER near Gateway	600	105		572	510	105		488
MISSOURI RIVER at Toston (7)	2696	101	3470	2,671	2350	101	3072	2,330
SUN RIVER at Gibson Dam (8)	510	88	596	580	465	88	544	529
MISSOURI RIVER at Fort Benton (9)	4081	98		4,148	3570	98		3,640
MARIAS RIVER near Shelby	540	94	521	577	500	94	494	532
MISSOURI RIVER at Virgelle (11)	4488	94		4,793	3980	94		4,238
MISSOURI RIVER near Landusky (11)	4991	96		5,214	4400	96		4,586
MISSOURI RIVER below Fort Peck Dam (11)	4691	95		4,929	4160	95		4,381
INFLOW LAKE SAKAKAWA, ND (11)	12780	95		13,450	11620	95		12,239

- Adjusted for storage in Lima Reservoir.
- Adjusted for storage in Lima and Clark Canyon Reservoirs.
- Adjusted for storage in Hebgen Lake.
- Adjusted for storage in Hebgen Lake and Ennis Lake.
- Sum of West Fork Hyalite Creek and East Fork Hyalite Creek above the Reservoir.
- Adjusted for storage in Middle Creek Reservoir.
- Adjusted for storage in Lima, Hebgen, Ennis & Clark Canyon Reservoirs.
- Adjusted for storage in Gibson Reservoir & diversions.
- Adjusted for storage in Lima, Clark Canyon, Hebgen, Ennis, Gibson, Fishkum, Willow Creek & Canyon Ferry Reservoirs.
- Adjusted for storage in Two Medicine Reservoir & diversions in Two Medicine Canal.
- Adjusted for all upstream reservoirs.
- Flow at Eastern Crossing minus St. Mary's Canal.
- Adjusted for storage in Lake Sherburne.

ALL FORECASTS PREPARED IN COOPERATION WITH THE NATIONAL WEATHER SERVICE

## SUMMARY of SNOW MEASUREMENTS

RIVER BASIN and/or SUBWATERSHED	Number of Gauging Stations	THIS YEAR'S SNOW WATER AS PERCENT OF	
		Last Year	Average
Beaverhead	11	132	157
Ruby	3	97	126
Big Hole	8	94	104
Boulder	9	127	109
Jefferson	31	115	127
Hudson	20	114	127
Gallatin	16	97	97
Missouri Headwater West-side Missouri (Toston-Cascade)	8	125	108
Smith-Belt-Arrow	5	83	71
Missouri Main-stem	13	97	83
Teton & Sun	4	95	81
Marias	3	106	81
Marias-Teton-Sun	7	101	81
Judith-Musselshell	5	83	71
Milk	6	134	93
Bear Paws	5	140	74
Missouri (Total)	97	107	107
Saskatchewan			
St. Mary's	2	131	98
Bow River in Alberta	--	--	--

# Yellowstone River Drainage

## STREAMFLOW FORECASTS

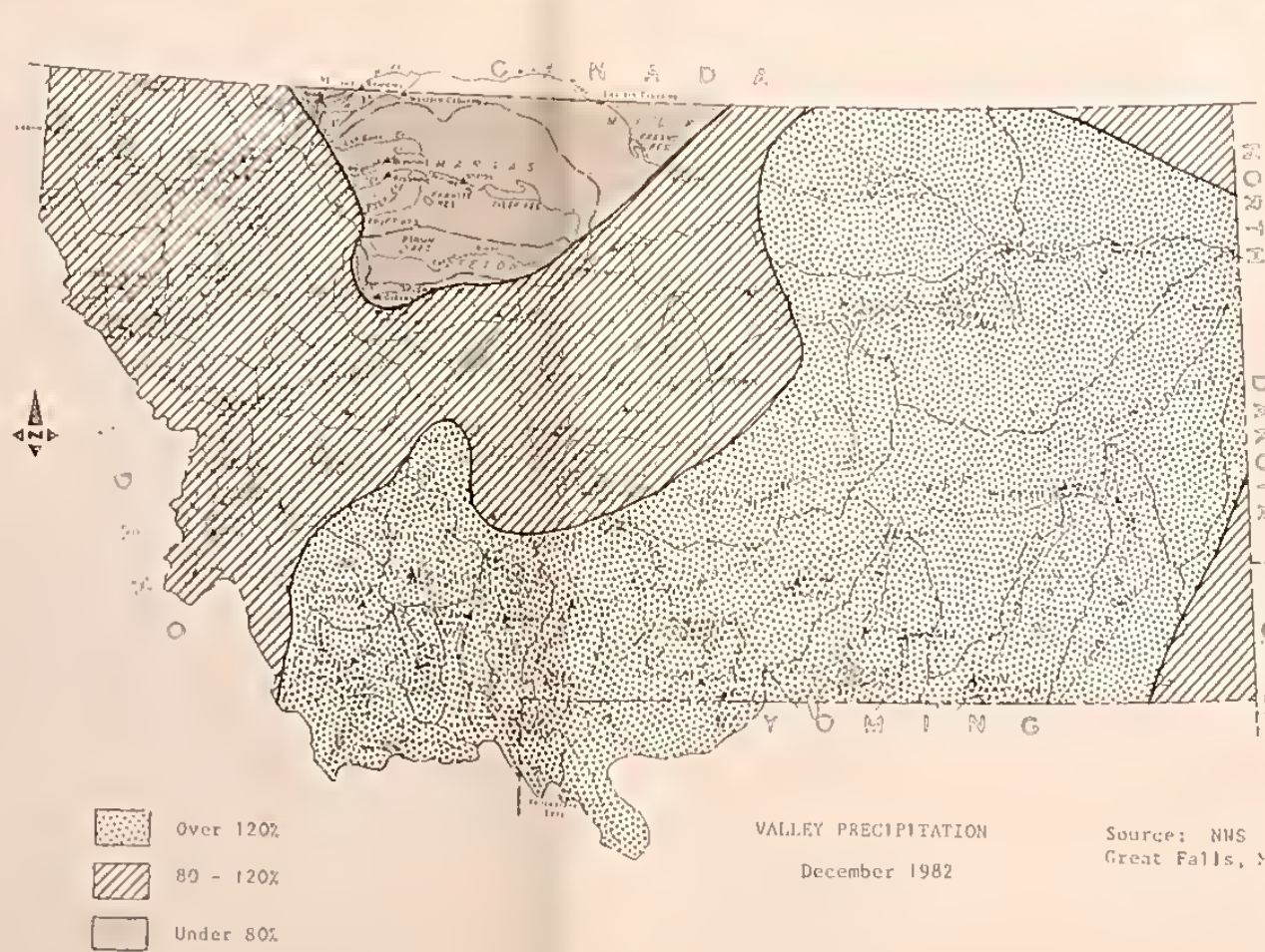
BASIN, STREAM and/or FORECAST POINT	THIS YEAR				PAST RECORD			
	FORECAST		THOUSAND ACRES		FORECAST		THOUSAND ACRES	
	Thousand Acres	Percent of Average	Last Year	Average	Thousand Acres	Percent of Average	Last Year	Average
PERIOD	April - September				April - July			
YELLOWSTONE RIVER at Corwin Springs	1975	94	2497	2,102	1640	94	1978	1,749
YELLOWSTONE RIVER near Livingston	2300	93		2,471	1900	93		2,048
CLARKS FORK RIVER near Belfry	580	90		644	510	90		564
YELLOWSTONE RIVER at Billings	4314	92	5171	4,682	3660	92	4307	3,979
BIGHORN RIVER near St. Xavier (3)	2056	101	2116	2,034	1880	101	1693	1,861
YELLOWSTONE RIVER at Miles City (4)	6663	93		7,142	5800	93		6,243
YELLOWSTONE RIVER near Sidney (5)	7410	95		7,806	6460	95		6,805

- Adjusted for storage in Mystic Lake.
- Adjusted for storage in Cooney Reservoir.
- Adjusted for storage in Buffalo Bill, Boysen, Bull Lake, Pilot Butte and Bighorn Reservoirs.
- Adjusted for storage in Bull Lake, Buffalo Bill, Boysen, Pilot Butte, Bighorn and Tongue River Reservoirs.
- Adjusted for reservoirs shown in (4) and diversions into the Lower Yellowstone Canal.

ALL FORECASTS PREPARED IN COOPERATION WITH THE NATIONAL WEATHER SERVICE

## SUMMARY of SNOW MEASUREMENTS

RIVER BASIN and/or SUBWATERSHED	Number of Gauging Stations	THIS YEAR'S SNOW WATER AS PERCENT OF	
		Last Year	Average
Upper Yellowstone			
ab Livingston	13	86	84
Shields	4	86	76
Boulder			
Stillwater			
Rock Creek & Clark's Fork	10	105	88
Yellowstone (ab Bighorn River)	27	93	84
Bighorn/Wyoming			
Little Bighorn			
Bighorn (Total)			
Tongue			
Powder			
Yellowstone (Total)	27	93	84



# SNOW SURVEY DATA

SNOW January 1983

DRAINAGE BASIN and/or SNOW COURSE	Elevation	Date of Survey	THIS YEAR		PAST RECORD	
			Snow Depth (Inches)	Water Content (Inches)	Snow Depth (Inches)	Water Content (Inches)
			Last Year	Average	Last Year	Average
ARCH FALLS	7350	K/27	24	5.0	4.6	5.9
ASHLEY DIVIDE	4820	K/31	20	5.4	3.5	-
ASHLEY LAKE	4000	K/31	15	2.4	2.0	-
BADGER PASS	6900	1/06	4.8	13.54	10.5	21.2
BADGER PASS PILLW	6900	1/01	SP	4.1	10.5	-
BANFIELD MOUNTAIN	5600	K/27	44	10.0	9.8	11.6
BANFIELD MOUNTAIN PILLW	5600	K/27	SP	9.8	8.4	9.7
BARKER LAKES	8250	K/30	40	10.6	6.3	-
BARKER LAKES PILLW	8250	1/01	SP	11.8	6.7	-
BASIN CREEK	7180	K/28	2.8	6.6	5.6	-
BASIN CREEK PILLW	7180	1/01	SP	4.8	3.8	-
BEAGLE SPRINGS PILLW	8850	1/01	SP	3.6	4.3	-
BEAR PAW SKI AREA	5200	K/30	14	1.8	1.0	2.6
BIG SKY	7700	1/05	32	7.9	8.5	7.0
BLACK BEAR	7950	1/04	81	25.3	21.8	17.3
BLACK BEAR PILLW	7950	1/01	SP	20.8	21.1	16.4
BLACK PIKE	7100	K/29	27	4.1	4.6	5.2
BLACK PIKE PILLW	7100	K/29	SP	4.8	6.8	6.4
BLOODY DICK PILLW	7600	K/29	SP	5.4	7.4	-
BLUE LAKE	5900	1/06	42	10.04	8.5	10.8
BOULDER MOUNTAIN PILLW	7950	1/01	SP	7.6	10.3	-
BOX CANYON PILLW	6670	1/01	SP	3.5	3.3	-
BRIDGER DOWL	7250	K/28	37	9.0	10.6	13.1
BRIDGER DOWL PILLW	7250	K/28	SP	8.5	11.3	12.3
CALVERT CREEK PILLW	6450	K/29	SP	3.6	5.3	6.0
CARROT BASIN	9000	K/28	69	19.4	17.2	16.6
CARROT BASIN PILLW	7000	K/28	SP	15.9	14.6	12.2
CASHE CREEK PILLW	7800	1/01	SP	2.7	4.1	-
CEDAR GROVE	4100	K/27	27	4.7	-	5.3
CHESSMAN RESERVOIR	6200	K/27	24	3.2	1.2	1.4
CLOVER MEADOW PILLW	8600	1/01	SP	7.0	9.4	-
COLE CREEK	7850	K/30	43	9.7	5.0	8.6
COLE CREEK PILLW	7850	K/30	SP	10.7	5.5	8.5
COMBINATION	5600	K/29	1.6	3.0	2.0	2.5
COMBINATION PILLW	5600	K/29	SP	3.4	2.4	2.8
COOKE STATION	8150	K/21	32	6.5	-	8.6
COPPER BOTTOM	5200	K/29	1.8	3.3	-	-
COPPER BOTTOM PILLW	5200	K/29	SP	3.1	4.8	7.4
COPPER CAMP	6950	K/29	40	10.0	-	-
COPPER CAMP PILLW	6950	K/29	SP	10.4	12.0	19.6
COPPER CREEK	5700	K/29	25	5.0	-	-
COPPER LAKE CREEK	6100	K/29	34	7.5	-	-
COYOTE HILL	4700	K/27	23	4.0	4.0	4.0
CRYSTAL LAKE PILLW	6100	1/01	SP	6.0	5.6	-
DAISY PEAK	7600	K/29	24	4.8	4.6	-
DAILY CREEK PILLW	5780	1/01	SP	6.0	5.4	-
DARKHORSE LAKE PILLW	8600	1/01	SP	8.7	15.0	-
DEADMAN CREEK	6450	K/27	21	3.5	4.2	5.6
DEADMAN CREEK PILLW	6450	K/27	SP	3.5	4.1	5.2
DESEH MOUNTAIN	5600	1/06	29	8.1	6.2	7.0
DEVILS SLIDE	8100	K/27	40	10.0	10.1	10.5

SNOW January 1983

DRAINAGE BASIN and/or SNOW COURSE	Elevation	Date of Survey	THIS YEAR		PAST RECORD	
			Snow Depth (Inches)	Water Content (Inches)	Snow Depth (Inches)	Water Content (Inches)
			Last Year	Average	Last Year	Average
DISCOVERY BASIN	7050	K/27	27	4.0	4.0	6.0
DIVIDE PILLW	7900	1/01	SP	6.8	6.7	4.6
DIX HILL	6400	1/01	24	6.2	3.5	5.1
EMERY CREEK	4350	1/06	36	10.8	7.7	7.2
EMERY CREEK PILLW	4350	1/01	SP	7.6	5.9	-
FISH CREEK	8000	K/28	32	7.7	5.8	-
FISHER CREEK	9100	K/21	56	13.8	16.0	17.7
FISHER CREEK PILLW	9100	K/21	SP	13.0	15.8	16.4
FLATTOP MOUNTAIN PILLW	6300	1/01	SP	20.5	15.6	22.2
FLEECER RIDGE	7500	K/31	21	4.8	5.7	5.1
FOURTH OF JULY	3450	K/30	23	4.5	2.7	-
FRIDAY HILL	4620	K/30	41	9.2	6.4	-
FROHNER MEADOWS	6480	K/27	30	5.0	2.6	4.1
FROHNER MEADOWS PILLW	6480	K/27	SP	5.0	3.2	4.3
GARVER CREEK	4250	K/27	30	5.5	5.0	5.9
GARVER CREEK PILLW	4250	K/27	SP	5.6	4.9	5.0
GIBBONS PASS	7100	K/29	44	10.6	11.2	9.1
GRAVE CREEK	4300	K/27	38	7.3	6.4	9.0
GRAVE CREEK PILLW	4300	1/01	SP	6.4	7.1	8.8
GRIZZLY PEAK	8640	K/30	40	9.6	4.8	8.2
HAND CREEK	5030	K/29	25	4.7	5.3	-
HAND CREEK PILLW	5030	1/01	SP	4.9	5.1	-
HAWKINS LAKE	6450	K/27	54	14.2	12.2	14.6
HAWKINS LAKE PILLW	6450	K/27	SP	12.5	10.6	14.1
HEART LAKE TRAIL	4800	K/30	31	7.6	10.7	6.6
HEBGEN DAM	6550	1/03	35	7.4	4.6	5.0
HELL ROARING DIVIDE	5770	K/30	50	13.0	9.2	14.5
HOLBROOK	4530	1/06	20	3.54	4.0	4.2
HOOD MEADOW	6600	K/27	27	4.3	4.4	5.5
HOOD BASIN	6000	K/30	70	21.2	24.6	22.3
HOOD BASIN PILLW	6000	1/01	SP	18.0	17.5	20.6
HOOD CREEK	5900	K/30	66	18.8	20.8	18.8
JOHNSON PARK	6450	K/29	14	2.6	2.2	-
KINGS HILL	7500	K/27	24	4.5	5.6	7.5
KIWAIS CAMP	3720	K/30	8	4.6	-	0.8
KRAFT CREEK PILLW	4750	1/01	SP	6.7	5.0	-
LAKE CREEK	6100	K/30	26	5.4	3.0	4.8
LAKEVIEW CANYON	6930	K/29	19	9.8	3.0	5.4
LAKEVIEW RIDGE	7400	K/29	17	9.2	3.4	5.0
LAKEVIEW RIDGE PILLW	7400	1/01	SP	10.3	4.2	-
LEMMI RIDGE PILLW	8100	K/28	SP	4.2	5.9	4.9
LICK CREEK	6860	K/27	16	5.3	4.7	4.3
LICK CREEK PILLW	6860	K/27	SP	4.1	5.0	4.4
LONE MOUNTAIN	8880	1/04	36	10.9	15.8	10.5
LOST HORSE	5940	K/28	44	11.4	16.2	13.8
LOWER TWIN PILLW	7900	1/01	SP	12.7	10.8	-
MADISON PLATEAU	7750	1/04	51	14.5	9.0	9.6
MADISON PLATEAU PILLW	7750	1/01	SP	12.9	11.7	10.1
MANY GLACIER	4960	K/26	16	8.6	5.9	-
MANY GLACIER PILLW	4960	1/01	SP	8.1	5.3	-
MARIAS PASS	5250	K/31	34	7.8	6.0	6.6
MAYNARD CREEK	6710	K/28	26	5.7	5.3	5.5
MAYNARD CREEK PILLW	6210	K/28	SP	4.5	4.8	5.3
MONUMENT PEAK PILLW	8800	1/01	SP	7.8	11.0	-
MOULTON RESERVOIR	6850	K/29	19	3.0	2.0	-

SNOW January 1983

DRAINAGE BASIN and/or SNOW COURSE	Elevation
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# Columbia River Drainage

## STREAMFLOW FORECASTS

BASIN, STREAM and/or FORECAST POINT	THIS YEAR				PAST RECORD				THIS YEAR				PAST RECORD			
	FORECAST				THOUSAND ACRE FEET				FORECAST				THOUSAND ACRE FEET			
	Thousand Acre Feet	Percent of Average	Last Year	Average	Thousand Acre Feet	Percent of Average	Last Year	Average	Thousand Acre Feet	Percent of Average	Last Year	Average	Thousand Acre Feet	Percent of Average	Last Year	Average
PERIOD	April - September								April - July							
	April - June															
KOOTENAI RIVER below Libby Dam (1)	6,940	96	7,246	5,930	96	6,178			6,178				6,178			
KOOTENAI RIVER at Leona (1)	8,760	99	8,883	7,620	99	7,727	6,090	99	6,090	99			6,150			
BLACKFOOT RIVER near Bonner	875	86	1,017	790	86	920	680	86	680	86			794			
CLARK FORK RIVER above Milltown (6)	860	102	843	745	102	730	625	102	625	102			613			
CLARK FORK RIVER above Missoula	1,735	93	1,859	1,535	93	1,651	1,305	93	1,305	93			1,408			
BITTERROOT RIVER near Darby	550	91	602	504	91	552	435	91	435	91			480			
BITTERROOT RIVER at Missoula (9)	1,390	90	1,543	1,275	90	1,416	1,090	90	1,090	90			1,211			
CLARK FORK RIVER below Missoula	3,125	92	3,405	2,810	92	3,069	2,395	91	2,395	91			2,618			
CLARK FORK RIVER at St. Regis	4,130	91	4,521	3,730	91	4,078	3,190	91	3,190	91			3,492			
NORTH FORK FLATHEAD RIVER near Columbia Falls	1,890	96	1,969	1,710	96	1,782	1,440	96	1,440	96			1,498			
MIDDLE FORK FLATHEAD RIVER near West Glacier	1,950	102	1,911	1,785	102	1,750	1,500	102	1,500	102			1,470			
SOUTH FORK FLATHEAD RIVER near Columbia Falls (10)	2,140	93	2,302	2,005	93	2,159	1,750	93	1,750	93			1,884			
FLATHEAD RIVER at Columbia Falls (10)	6,120	97	6,330	5,635	97	5,827	4,800	97	4,800	97			4,964			
FLATHEAD RIVER near Polson (11)	7,100	96	7,394	6,530	96	6,806	5,540	96	5,540	96			5,779			
CLARK FORK RIVER near Plains (11)	11,500	93	12,340	10,500	94	11,222	8,930	94	8,930	94			9,507			
CLARK FORK RIVER at Whitehorse Rapids (12)	12,900	94	13,781	11,700	93	12,519	9,940	93	9,940	93			10,633			

- (1) Adjusted for storage in Lake Kootenai.
- (2) Adjusted for storage in Silver Lake, diversions to and pumping from Georgetown Lake.
- (3) Adjusted for storage in Georgetown Lake, diversions from and pumping to Silver Lake.
- (4) Sum Flint Creek at Maxville and Boulder Creek at Maxville.
- (5) Sum of North Fork Lower Willow Creek near Hall and South Fork Lower Willow Creek near Hall.
- (6) Difference in observed flow Clark Fork above Missoula and Blackfoot near Bonner.

- (7) Adjusted for storage in Painted Rocks Reservoir.
- (8) Adjusted for diversion into Sunset Highline Canal.
- (9) Difference in observed flow Clark Fork above and below Missoula.
- (10) Adjusted for storage in Hungry Horse Reservoir.
- (11) Adjusted for storage in Hungry Horse Reservoir and Flathead Lake.
- (12) Adjusted for storage in Hungry Horse Reservoir, Flathead Lake and Roxon Rapids Reservoir.

ALL FORECASTS PREPARED IN COOPERATION WITH THE NATIONAL WEATHER SERVICE

## SUMMARY of SNOW MEASUREMENTS

RIVER BASIN and/or SUBWATERSHED	Number of Courses Averaged	THIS YEAR'S SNOW WATER AS PERCENT OF	
		Last Year	Average
East Kootenay/BC	8	113	75
Kootenai/Montana	12	111	87
Kootenai above Bonners Ferry...	20	112	83
Little Bitterroot	--	---	---
N. Fk. Flathead..	7	123	84
M. Fk. Flathead..	6	119	94
S. Fk. Flathead..	7	132	119
Swan .....	3	138	120
Flathead .....	23	127	100
Stillwater & Whitefish.....	1	141	89
Clark Fork above Blackfoot .....	20	119	102
Blackfoot .....	7	100	81
Upper Clark Fork above Missoula ..	27	112	93
Bitterroot .....	11	74	87
Lower Clark Fork below Missoula ..	11	98	96
Clark Fork (Total w/o Flathead)...	49	94	92
Pend O'Reille (Clark Fork & Flathead) .....	72	106	95
Columbia (Pend O'Reille & Kootenai) .....	92	107	93

## Map of snow survey sites

A map of Montana Snow Survey Sites is included in this Water Supply Outlook Report. Please keep this copy, because future issues this season will not include a map.

A few extra copies are available from the Snow Survey Office. Maps showing only SNOTEL sites are also available. If needed, additional copies may be requested.

## Snowfall pH

Again this winter, snow surveyors will make pH measurements of snow at selected snow courses in Montana.

Additional studies are being done by Montana State University and various state and federal agencies to determine areas vulnerable to low pH snowfall or precipitation.

## LATE ARRIVING DATA

SNOW January 1983		THIS YEAR				PAST RECORD	
DRAINAGE BASIN and/or SNOW COURSE		Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (Inches)		Average
NAME	Elevation				Last Year	Average	
Big Coulee	5100	1/03	15	3.7	—	2.9	
Highwood Divide	5650	K/28	24	5.2	—	4.8	
Highwood Station	4600	1/03	15	3.0	0.0	2.3	
Lubrecht Flume	4680	1/06	15	3.6	3.0	2.4	
Lubrecht Flume Pillow	4680	1/01	SP	3.7	2.5	2.2	
Lubrecht Forest #3	5450	1/06	17	3.2	2.0	2.9	
Lubrecht Forest #4	4650	1/06	9	1.6	1.3	1.5	
Lubrecht Forest #6	4040	1/06	10	2.0	1.6	1.5	
Lubrecht Hydroplot	4200	1/06	17	2.4	2.6	2.8	
North Fork Elk Creek	6250	1/05	30	5.3	5.4	5.1	

## AGENCIES AND ORGANIZATIONS COOPERATING IN MONTANA SNOW SURVEYS

### GOVERNMENT AGENCIES

#### Canada

- Department of the Environment
- Atmospheric Environment Service
- Water Management Service
- British Columbia Ministry of Environment
- Inventory and Engineering Branch, Hydrology Section
- Alberta Environment
- Technical Services Division

#### Federal

- Department of the Army - Corps of Engineers
- Department of Agriculture - Forest Service
- Department of Commerce - National Environmental Satellite Service
- Department of Interior - National Weather Service
- Department of Interior - Bureau of Indian Affairs
- Department of Interior - Fish and Wildlife Service
- Department of Interior - Geological Survey
- Department of Interior - National Park Service
- Department of Interior - Bureau of Reclamation
- Department of Energy - Bonneville Power Administration

### STATE AGENCIES

- Montana Conservation Districts
- Montana Department of Fish, Wildlife and Parks
- Montana Department of Natural Resources and Conservation
- Montana State University - Agricultural Experiment Station
- University of Montana - School of Forestry

### PRIVATE ORGANIZATIONS

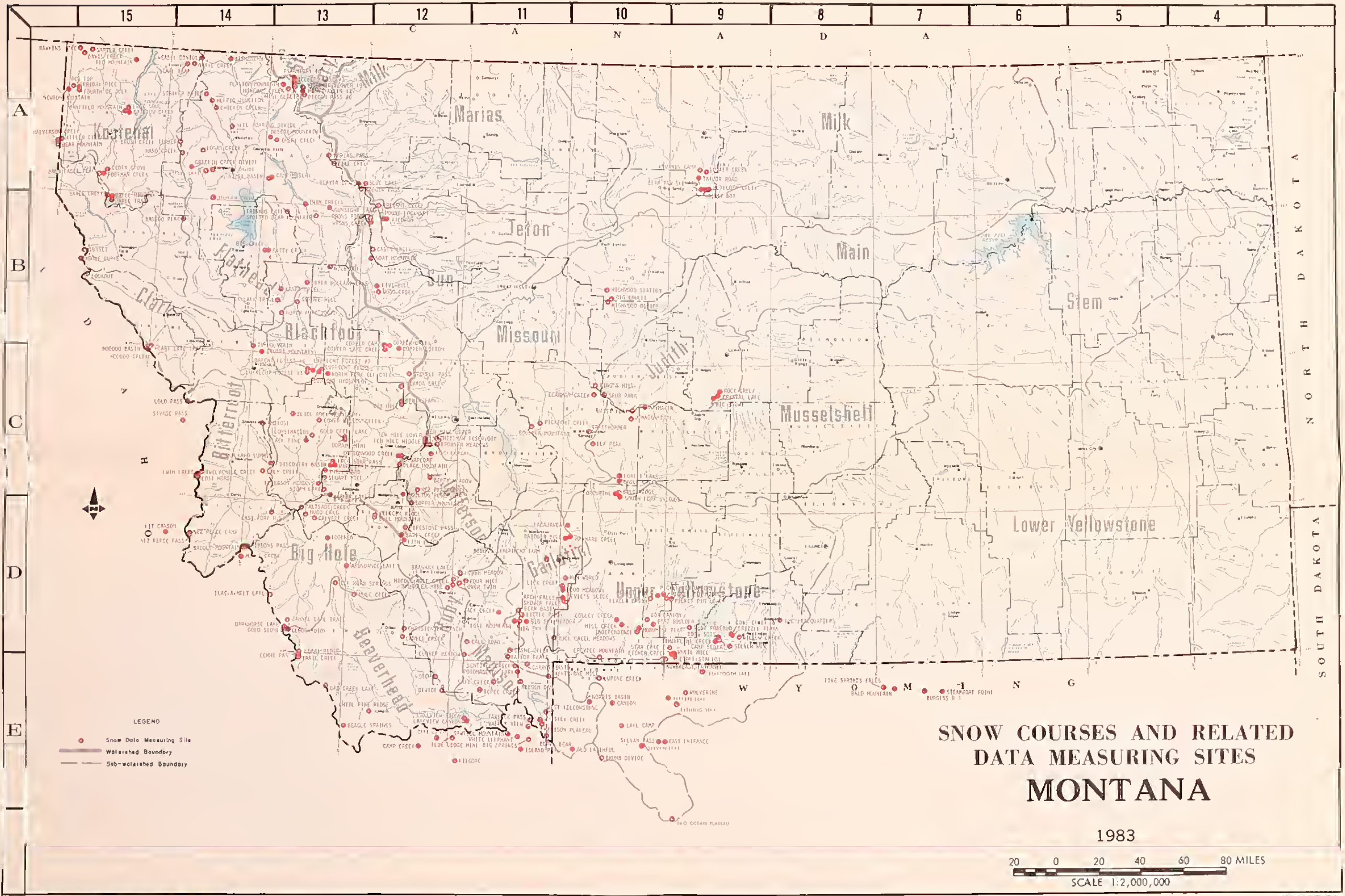
- The Anaconda Company
- Big Sky of Montana
- Butte Water Company
- Flathead Valley Community College
- Montana Power Company

Other organizations and individuals furnish valuable information for snow survey reports. Their cooperation is gratefully acknowledged.

## RESERVOIR STORAGE (Thousand Acre Feet) END OF MONTH December 1982

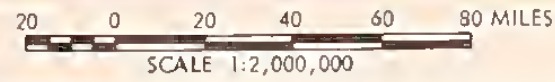
Reservoir Storage (Including Active) End of Month		Usable Capacity	Usable Storage		
Basin or Stream	Reservoir		This Year	Last Year	Average
COLUMBIA					
Kootenai	Kootenai	5,748.2	3,645.0	3,655.0	---
Flathead	Hungry Horse	3,451.0	3,224.0	2,603.0	2,624.0
	Flathead Lake	1,791.0	1,284.0	1,171.0	1,428.0
	Camas (4)	45.2	29.0	20.0	19.4
	Mission Valley (8)	100.3	40.3	19.6	34.4
Clark Fork	Georgetown Lake	31.0	28.2	29.8	28.2
	Lower Willow Creek	4.9	1.3	0.9	1.4
	Nevada Creek	12.6	4.9	4.5	4.3
	Noxon Rapids	334.6	327.0	322.8	318.7
Bitterroot	Painted Rocks	31.7	---	---	18.3
	Como	34.9	---	---	9.0
MISSOURI					
Beaverhead	Lima	84.0	47.5	25.0	38.8
	Clark Canyon	257.2	172.2	155.6	132.7
Ruby	Ruby	38.8	22.3	22.4	20.4
Madison	Hebgen Lake	377.5	274.2	275.3	241.5
	Ennis Lake	41.0	30.4	30.4	35.6
Gallatin	Middle Creek	8.0	3.7	3.7	2.9
Missouri	Canyon Ferry	2,043.0	1,821.0	1,747.0	1,753.0
	Hauser & Helena	61.9	63.0	63.0	61.2
	Lake Helena	10.4	10.9	10.9	10.2
	Holter Lake	81.9	80.5	78.1	76.2
	Fort Peck Lake	18,910.0	16,040.0	14,590.0	15,820.0
Smith	Smith River	10.6	7.3	5.7	6.4
	Newlan Creek	12.4	8.9	---	---
Husselshell	Bair	7.0	5.0	2.4	4.2
	Martinsdale	23.1	17.4	10.4	10.0
	Deadman's Basin	72.2	64.8	---	44.7
Shn	Gibson	99.1	54.0	39.3	38.6
	Willow Creek	32.2	23.4	22.4	20.6
	Pishkun	32.0	20.5	19.3	16.7
Marias	Lower Two Medicine	11.9	---	---	6.1
	Four Horns	19.2	---	---	13.2
	Swift	30.0	11.7	5.8	12.9
	Lake Frances	111.9	85.7	78.2	70.9
Milk	Elwell (Tiber)	1,347.0	689.9	514.7	545.6
	Beaver Creek	3.5	3.0	0.7	1.4
	Fresno	127.2	15.5	34.5	68.2
	Nelson	66.8	48.7	58.9	45.0
HOUSON BAY					
St. Mary's	Lake Sherburne	64.3	31.4	12.6	17.0
YELLOWSTONE					
Stillwater	Nystic Lake	21.0	8.9	8.7	13.1
Clark's Fork	Cooney	27.4	15.0	0	14.2
Tongue	Tongue River	68.0	29.1	22.2	30.4
Rigdon	Rigdon Lake	1,356.0	985.0	941.5	580.3





SNOW COURSES AND RELATED  
DATA MEASURING SITES  
MONTANA

1983



Source:  
Base map prepared by SCS, WISC Corro Unit from USGS 1:1,000,000 Nat. Atlas.  
Thematic details supplied by SCS/USFWS.  
U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE USDA-SCS-FORT WORTH, TEXAS 76102



# INDEX TO MONTANA SNOW COURSES AND DATA SITES

Snow Course	Elev.	Sec.	Imp.	Range	Sensors In Addition to Snow Course	Drainage Basin
Abundance Lake	8800	7	35	11W		Big Hole
Ambrase	6480	10	3N	18W		Blitterroot
Arch Falls	7350	3	55	6E		Gallatin
Ashley Divide	4820	10	28N	23W		Flathead
Ashley Lake	4000	8	28N	23W		Flathead
Badger Pass	6500	4	27N	11W		Teton-Marías-Sun
Bald Eagle Pass	5700	6	27N	31W		Kootenai
Bald Ridge	7500	11	4N	10E		Upper Yellowstone
Banished Mountain	5600	4	32N	30W		Kootenai
Baren Creek	5500	36	26N	31W		Kootenai
Barco Midway	4600	31	26N	30W		Kootenai
Berra Trail	3800	5	25N	30W		Kootenai
Barber Falls	8250	37	4N	12W		Clark Fork
Basin Creek	7160	31	1W	7W		Clark Fork
Basin Creek	5350	11	24N	25W		Flathead
Beagle Springs	8850	6	16S	11W		Beaverhead
Bea Basin	6250	9	6S	3E		Gallatin
Brar Paw Ski Area	5700	21	28N	16E		Hill
Brook Lake	5900	31	28N	31W		Flathead
Berry Meadow	7000	8	5N	5W		Jefferson
Big Coulter	5100	10	19N	9E		Missouri Main Stem
Big Creek	6750	7	72N	16W		Flathead
Big Sky	7700	30	6S	3E		Gallatin
Big Sky Meadow	6350	35	6S	3E		Gallatin
Big Snowy	7150	25	12N	17E		Judith
Blind Bear	7950	27	15S	5E		Madison
Black Mountain	7750	34	7N	8W		Clark Fork
Black Pine	7300	26	8N	35W		Clark Fork
Bloody Bluff	7600	12	6S	16W		Beaverhead
Blur Lake	5900	25	26N	21W		Teton-Marías-Sun
Bots Lake	7750	35	7S	18E		Upper Yellowstone
Boulder Mountain	7950	3	9N	3E		Missouri Main Stem
Box Canyon	6700	28	6S	31E		Upper Yellowstone
Bozeman Creek	5100	24	28N	16E		Hill
Bozeman Experimental Forest	4775	7	2S	5E		Gallatin
Bozeman Falls	8850	5	4S	3W		Ruby
Bridge Bowl	7250	25	3N	6E		Gallatin
Brinkley Creek	3900	2	32N	30W		Kootenai
Brush Creek	5000	12	30N	16W		Kootenai
Bull Mountain	6600	18	2N	9W		Big Hole
Cabin Creek	5200	34	23N	10W		Teton-Marías-Sun
Call Road	8050	31	8S	2W		Madison
Calvert Creek	6430	24	2N	14W		Big Hole
Camp Misco	6400	30	28N	18W		Flasher
Camp Scio	7890	2	8S	18E		Upper Yellowstone
Carrot Basin	5000	18	10S	4E		Gallatin
Carler Creek	7400	22	8S	7W		Beaverhead
Cash Creek	7800	8	9S	3E		Gallatin
Cedar Grove	3760	35	28N	31W		Kootenai
Chesapeake Reservoir	6200	7	6N	5W		Missouri Main Stem
Chicken Creek	4060	14	33N	23W		Flathead
Chickadee Ranch	6000	34	7S	7W		Beaverhead
Clover Meadow	8600	28	9S	2W		Ruby
Coler Creek	7850	26	7S	19E		Upper Yellowstone
Collier Creek	6300	34	6S	10E		Upper Yellowstone
Combination	5600	7	8N	14W		Clark Fork
Cooler Station	8350	19	9S	15E		Upper Yellowstone
Copper Bottom	5100	15	15N	0W		Clark Fork
Copper Camp	6950	3	15N	9W		Clark Fork
Copper Creek	5700	1	15N	9W		Clark Fork
Copper Lake Creek	6100	3	15N	9W		Clark Fork
Copper Mountain	7700	13	3N	7W		Jefferson
Cottonwood Creek	5400	14	7N	8W		Clark Fork
Coyote Hill	4200	12	18N	16W		Clark Fork
Crowder Mountain	8400	22	9S	9E		Upper Yellowstone
Crystal Lake	6100	19	32N	18E		Judith
Cud Creek Lake	8400	24	12S	13W		Beaverhead
Daisy Peak	7600	34	31N	31E		Musselshell
Daily Creek	5780	16	5N	18W		Blitterroot
Deerhorn Lake	8600	4	8N	16W		Big Hole
Davis Creek	5400	20	37N	33W		Kootenai
Drummond Creek	6450	23	17N	8E		Missouri Main Stem
Osceola Mountain	5600	30	31N	10W		Gallatin
Devil's Slide	8100	14	5S	6E		Clark Fork
Oliver Canyon	7050	21	6N	13W		Ruby
Oliver	7800	14	32S	4W		Clark Fork
Ola Hill	6400	24	11N	8W		Musselshell
Fagle Creek	7000	2	5N	10E		Gallatin
East Boulder S	8250	14	7S	12E		Blitterroot
East Fork R. S.	5400	16	2N	17W		Clark Fork
El Qarado Mine	7800	23	8N	32W		Clark Fork
El Horn Springs	7800	21	4S	12W		Beaverhead
El Peak	8000	10	8N	0E		Missouri Main Stem
Emery Creek	4350	70	31N	38W		Flathead
Fatty Creek	5500	8	22N	18W		Flathead
Fish Creek	8000	5	1S	7W		Jefferson
Flisher Creek	9100	11	9S	14E		Upper Yellowstone
Elm-Bull	5700	25	20N	10W		Teton-Marías-Sun
Flattop Mountain	6300	12	35N	18W		Flathead
Flower Ridge	7500	3	1N	10W		Big Hole
Foolhorn	8280	13	1S	13W		Big Hole
Forest Lake	6400	26	6N	10E		Musselshell
Four Mile	6900	5	4S	2W		Madison
Fourth of July	3450	19	34N	33W		Kootenai
Frederick Pass	8000	12	6N	13W		Clark Fork
Freight Creek	6000	13	26N	10W		Teton-Marías-Sun
Friday Hill	4620	19	34N	33W		Kootenai
Fryer Meadows	6480	23	8N	5W		Missouri Main Stem
Garry Creek	4250	38	37N	32W		Kootenai
Gibbons Pass	7100	3	2S	19W		Blitterroot
Goat Mountain	7000	20	22N	10W		Triana-Marías-Sun

Snow Course	Elev.	Sec.	Imp.	Range	Sensors In Addition to Snow Course	Drainage Basin
Gold Creek Lake	7700	14	8N	32W		Clark Fork
Gold Stone	8100	11	8S	18W		Beaverhead
Grasshopper	7000	19	9N	8E		Missouri Main Stem
Grave Creek	4300	1	36N	25W		Kootenai
Griffin Creek Divide	5150	31	28N	25W		Flathead
Grizzly Peak	8400	26	7S	39E		Upper Yellowstone
Gunsight Lake	6300	30	26N	13W		Flathead
Hand Creek	5035	6	28N	25W		Flathead
Hawkins Lake	6450	38	37N	33W		Kootenai
Hymnaker	8050	36	11N	12E		Musselshell
Heart Lake Inn	4800	13	34N	27W		Clark Fork
Hobbs Dam	6550	22	13S	3E		Madison
McCl Pinnling Divide	5770	35	31N	22W		Flathead
Merrig Junction	4850	19	34N	23W		Flathead
Highwood Divide	6650	16	19N	9E		Missouri Main Stem
Highwood Station	4600	20	20N	9E		Missouri Main Stem
Malbrook	4530	18	21N	13W		Flathead
Mood Meadow	6600	22	4S	6E		Gallatin
Hoodoo Basin	6000	17	14N	27W		Clark Fork
Hoodoo Creek	5900	16	14W	27W		Clark Fork
Icberg Lake #3	5600	1	35N	12W		St. Mary
Independence	7850	21	7S	12E		Upper Yellowstone
Independence	6450	6	5N	13W		Clark Fork
Jack Creek	6650	1	6S	1E		Madison
Johns Lake Trail	7200	24	7S	36W		Big Hole
Johnson Park	6450	16	10N	11E		Musselshell
Jasperine Tower #9	4900	22	35N	16W		SE Henry
Kerrin Creek	3300	25	30N	35W		Kootenai
King's Hill	7500	34	13N	8E		Missouri Main Stem
Kishorena	3890	14	37N	27W		Flathead
Kiwis Camp	3720	9	29N	36E		Hill
Knight Creek	4750	4	19N	17W		Flathead
Kain Creek	6100	27	11S	1E		Madison
Lakeview Canyon	6930	26	14S	2W		Beaverhead
Lakeview Ridge	7400	27	14S	2W		Beaverhead
Leah Pass	7400	9	10S	15W		Beaverhead
Lemhi Ridge	8100	4	10S	35W		Beaverhead
Lick Creek	6860	10	4S	6E		Gallatin
Little Fork	7400	22	4S	3E		Gallatin
Logan Creek	4300	34	30N	24W		Flathead
Long Mountain	8880	25	6S	2E		Gallatin
Lost Horse	5940	5	4N	23W		Gallatin
Lost Soul	4800	33	33N	29W		Blitterroot
Lower Lake	7900	12	4S	3W		Kootenai
Lower Willow Creek	4740	3	9N	14W		Madison
Lubrecht Flume	4680	13	13N	14W		Clark Fork
Lubrecht Forest #3	5450	19	33N	14W		Clark Fork
Lubrecht Forest #3	4650	23	13N	15W		Clark Fork
Lubrecht Forest #6	4040	11	13N	15W		Clark Fork
Lubrecht Hydrapole	4200	22	13N	14W		Clark Fork
Madison Plateau	7750	18	14S	5E		Madison
Manly Glacier	4960	10	35N	17W		St. Mary
Marías Pass	5750	31	30N	13W		Teton-Marías-Sun
Maynard Creek	6210	19	11N	7E		Gallatin
Middle Hill Creek	7850	17	4S	3W		Ruby
Milk Creek	7500	33	6S	11E		Upper Yellowstone
Minnel Creek	4000	34	35N	37W		Flathead
Monument Peak	8800	16	7S	12E		Upper Yellowstone
Moulton Reservoir	6050	17	4N	7W		Clark Fork
Mount Allen #7	5700	27	35N	16W		St. Mary
Mouns Eachware	6400	16	25N	9W		Teton-Marías-Sun
Mudd Lake	7650	24	2N	15W		Big Hole
Mule Creek	8100	9	5S	11W		Big Hole
Nevean Creek	6480	6	12N	7W		Clark Fork
New World	6700	74	3S	6E		Gallatin
Newton Mountain	5600	23	34N	33W		Kootenai
Nice Perce Camp	5580	39	1S	23W		Blitterroot
Nice Perce Creek	6500	16	4N	6W		Jefferson
Nice Perce Pass	6570	25	3S	24W		Blitterroot
Nolsy Basin	6040	25	26N	19W		Flathead
North Fork Elk Creek	6250	70	13N	13W		Clark Fork
North Fork Jocko	6330	3	17N	17W		Flathead
North Meadow	7500	24	3S	3W		Madison
Northwest Entrance	7400	33	9S	34E		Upper Yellowstone
Notch	8500	18	11S	4W		Ruby
Ophir Park	7150	13	11N	8W		Clark Fork
Palford Creek	8250	3	2N	15W		Big Hole
Patterson Meadows	7200	2	4N	14W		Clark Fork
Picket Pin 0	9450	36	4S	13E		Upper Yellowstone
Picket Pin tower	6200	1	5S	14E		Upper Yellowstone
Picket Pin Middle	7250	3	5S	14E		Upper Yellowstone
Picket Pin Upper	8100	37	4S	14E		Upper Yellowstone
Picket Foot Creek	6650	31	10N	4E		Missouri Main Stem
Piegan Pass #6	5500	27	35N	16W		St. Mary
Pila Creek	5930	5	29N	13W		Teton-Marías-Sun
Pipstone Pass	7200	10	11N	7W		Jefferson
Placer Basin	6830	11	5S	33E		Upper Yellowstone
PMC Headquarters	3656	34	6S	23E		Upper Yellowstone
Poorman Creek	5100	5	27N	31W		Kootenai
Porcupine	6500	10	4N	10E		Upper Yellowstone
Potomac Park	7150	33	10S	3E		Madison
Potomac #8	5800	36	36N	17W		St. Mary
Rd Mountain	6000	4	36N	29W		Kootenai
Red Top	5260	34	34N	34W		Kootenai
Rock Creek	5600	7	37N	18E		Judith
Rock Creek Meadows	8160	34	7S	5E		Gallatin
Rocky Peak	8000	17	7N	5W		Jefferson
Rocky Boy	4700	22	28N	16E		Hill
Sagehorn	6550	36	2N	6E		Upper Yellowstone

Snow Course	Elev.	Sec.	Imp.	Range	Sensors In Addition to Snow Course	Drainage Basin
Saddle Mountain	7940	5	2S	19W		Blitterroot
Sandwich Creek	8300	17	10S	3E		Madison
Shower Falls	8100	14	5S	6E		Gallatin
Silver Run	6630	11	8S	19E		Upper Yellowstone
Stallion Summit	7260	30	6N	17W		Clark Fork
Stylus Inn	6200	29	19N	17W		Flathead
Stylus-Me-E-Lake	8750	29	5S	17W		Big Hole
Stylus Rock Mountain	7100	35	10N	16W		Clark Fork
Swaggler Mine	6960	24	0S	4W		Ruby
South Fork Shields	8100	13	4N	10E		Upper Yellowstone
Spotted Bear Mountain	7000	23	25N	15W		Flathead
Spur Park	8100	70	12N	5E		Judith
Stahl Pool	6030	5	36N	25W		Kootenai
Star Lake E	9650	31	8S	15E		Upper Yellowstone